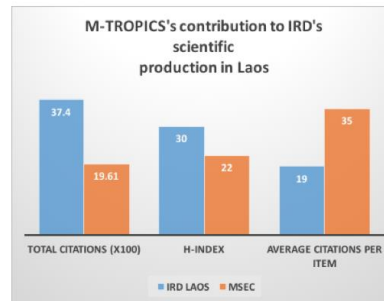
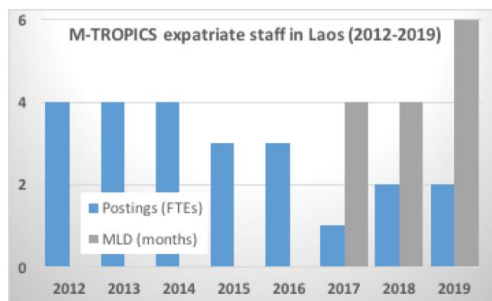
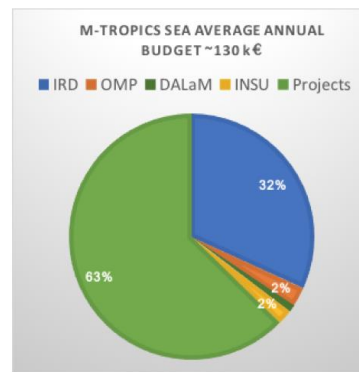


Since 1998, the Critical Zone Observatories (CZO) Multiscale TROPical Catchments (M-TROPICS) analyses the dynamics of soil losses in South East Asia. It includes two satellite sites in Thailand and Vietnam where basic variables are monitored (hydro-meteorology, land use and solid particles fluxes), and one master site in Laos with additional geophysical, geochemical and microbial measurements.

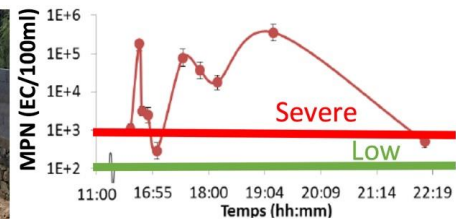
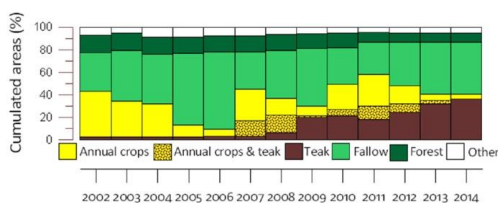
M-TROPICS offers an ideal framework for environmental interdisciplinary work that addresses diverse sustainability science issues. In Laos, the program links land use and climate change to human health through an understanding of the impact of water and sediment fluxes on the dissemination of microbiological contaminants.



M-TROPICS' research directly addresses 5 of the UN's sustainable development goals



and a further 2 through the associated Institutional Partnership Instruments



In Northern Laos, rapid expansion of teak tree plantations (brown bars in left plot) has drastically increased runoff of sediment-laden waters, resulting in floods (centre picture) that carry highly turbid waters severely contaminated with pathogenic bacteria (plot to the right).



M-TROPICS South East Asia

<https://mtropics.obs-mip.fr/>  [@mtropics_czo](https://twitter.com/mtropics_czo)

Leadership: Emma Rochelle-Newall (UMR iEES-Paris) and Olivier Ribolzi (UMR GET)

Historic and research network

M-TROPICS in South East Asia (SEA), previously named Management of Soil Erosion Consortium (MSEC), was set up in 1998 with Asian Development Bank (ADB) funding. It aimed to determine the causes and magnitude of soil erosion in 6 Southeast Asian countries, including Laos. After an initial monitoring phase of 4 years, the observatory was consolidated around the Thai, Vietnamese and Laotian sites, with joint support from IRD and the International Water Management Institute (IWMI). In 2011, the Lao site became more broadly dedicated to the study of processes linking land use and land use change on water and sediment fluxes and the associated dissemination of microbiological contaminants.

M-TROPICS is part of the French Research Infrastructure OZCAR (Critical Zone Observatories, Applications and Research), component of e-LTER (Integrated European long-term ecosystem, critical zone and socio-ecological system research infrastructure). It is also part of the international Critical Zone Exploration Network (CZEN).

Capacity building

Student training: since the early 2000s, a total of about **200 students at the L1-L2 level and above** have been trained through the M-TROPICS program and related projects in SEA, including **21 PhDs and 16 M2**.

Research projects

The existence of M-TROPICS SEA and the international recognition it has gained over years allowed mobilizing funds from several agencies, through **over 15 projects since 2008**, for **more than 3 M€ (Total cost)**: 4 ANR projects from 2008 to 2017; 4 INSU projects from 2008 to 2016; 1 PEPS CNRS project in 2012; 1 GIS-Climat, Environnement, Société project from 2010-2012; 2 RBV projects in 2014; 4 projects that use remote sensing technologies: 2 THEIA /Copernicus program of the European Union projects in 2016-2017; 1 TanDEM-X/TerraSAR-X project in 2017-2018 and 1 project supported by the Advanced Research Network on Science and Technology of Aeronautics and Space (RTRA STAE) in 2016-2017.

Institutional Partnership Instruments

Emerging research team - JEA Eco-Rubber (Soil functioning change under tree cultivation), Laos, Thailand 2014-2018

International Joint Laboratory - LUSES (Impacts of Land Use Change on Soil Ecosystem Services, 2012-2021) Laos, Thailand, and Vietnam.

Scientific publications and dissemination

Over 120 publications, >80% of which co-signed with local partners, including ~70 articles in peer-reviewed international journals; ~30 articles in National journals; more than 10 book chapters; 2 information booklets; ~15 flyers and policy briefs, in the English and Lao languages.

National Partner institutions



Department of Agricultural Land Management (DALaM), Vientiane, Laos



Soils and Fertilisers Research Institute, Hanoi, Vietnam



National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand